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EXAMINER	
HOFFMAN, BRANDON S	
ART UNIT	PAPER NUMBER
2136	8

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/609,019	YACOBI ET AL.
	Examiner	**Art Unit**
	Brandon Hoffman	2136

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20,30,41-52 and 55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20,30,41-52 and 55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *26 April 2004* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Claims 20, 30, 41-52, and 55 are pending in this office action, claims 1-19, 21-29, 31-40, 53, and 54 are cancelled.

2. Applicant's arguments, see pages 27-29, filed April 26, 2004, with respect to the rejection(s)of claim(s) 1-55 under 35 U.S.C. 102(a/e) and 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Maeshima et al. (USPN 6,486,923), Kohn et al. (USPN 6,570,990), and Graf et al. (Video Scrambling and Descrambling, 1998, Chapter 1).

Rejections

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

4. Claims 20 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeshima et al. (U.S. Patent No. 6,486,923) in view of Graf et al. (Video Scrambling and Descrambling, 1998, Chapter 1).

Regarding claim 20, Maeshima et al. teaches a method of generating encrypted analog first, second and third signals (R', G', B', respectively) from first, second, and third analog input signals (R, G, B, respectively) the method comprising:

- Pseudo-randomly generating at least one of a plurality of matrix coefficients, a1, a2, a3, b1, b2, b3, c1, c2, c3 (fig. 2, ref. num ra, rb, and rc); and
- Using an encryption circuit to perform a matrix multiplication operation to generate the encrypted analog first, second, and third signals, according to the following equations:

  R' = a1R + b1G + c1B

  G' = a2R + b2G + c2B,

  B' = a3R + b3G + c3B (col. 4, top of page, R', G', and B' are equal to Rdm, Gdm, and Bdm, respectively. R, G, and B are equal to Rd, Gd, and Bd, respectively. a1 through c3 are equal to a through i, respectively.).

Maeshima et al. does not teach wherein the matrix coefficients are generated such that each of the R', G' and B' signals will be the product of summing two signals in the set of analog signals R, G, B and subtracting one of the signals in the set of analog signals R, G, B.

Graf et al. teaches wherein the matrix coefficients are generated such that each of the R', G' and B' signals will be the product of summing two signals in the set of

- Combining said multiplied signal with at least a second signal generated from a second one of said first, second, and third analog input signals to produce said encrypted analog signal (fig. 2, ref. num 504 and 505),
  - Wherein said encryption value is a matrix coefficient (col. 3, lines 53-61).

Maeshima et al. does not teach wherein said matrix multiplication operation is performed using analog multipliers.

Graf et al. teaches wherein said matrix multiplication operation is performed using analog multipliers (page 4, Sine-Wave scrambling uses frequency components added together to scramble the data).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine wherein said matrix multiplication operation is performed using analog multipliers, as taught by Graf et al., with the method of Maeshima et al. It would have been obvious to combine wherein said matrix multiplication operation is performed using analog multipliers, as taught by Graf et al., with the method of Maeshima et al. because using analog multipliers saves time having to covert to digital multipliers since the R, G, and B signal are already analog signals.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kohn et al. (USPN '990) in view of Maeshima et al. (USPN '923), and further in view of Graf et al. (Video Scrambling and Descrambling, 1998, Chapter 1).

Regarding claim 30, Kohn et al. teaches a communication method comprising the steps of:

- Using a pseudo-random number generator to generate output values (fig. 2, ref. num 200); and
- Transmitting the first, second and third encrypted analog signals to a destination device (fig. 1, ref. num 134).

Kohn et al. does not teach modifying first, second, and third signals, by performing a matrix multiplication operation thereon utilizing matrix coefficients which are a function of at least one of the pseudo-random output values, the modified first, second and third signals being encrypted analog signals so as to define first, second and third encrypted analog signals, wherein said matrix multiplication involves summing an integer multiple of two of the first, second and third signals and subtracting an integer multiple of another one of said first second and third signals to produce the first encrypted analog signal.

Maeshima et al. teaches modifying first, second, and third signals, by performing a matrix multiplication operation thereon utilizing matrix coefficients which are a function

analog signals R, G, B and subtracting one of the signals in the set of analog signals R, G, B (page 4, Sine-Wave Scrambling through end of page 6).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the matrix coefficients generated such that each of the R', G' and B' signals will be the product of summing two signals in the set of analog signals R, G, B and subtracting one of the signals in the set of analog signals R, G, B, as taught by Graf et al., with the method of Maeshima et al. It would have been obvious to combine the matrix coefficients generated such that each of the R', G' and B' signals will be the product of summing two signals in the set of analog signals R, G, B and subtracting one of the signals in the set of analog signals R, G, B, as taught by Graf et al., with the method of Maeshima et al. because the summing and subtracting of signals confuses the sync separator causing them to function improperly, thus giving a scrambled video signal.

Regarding claim 55, Maeshima et al. a method of generating an encrypted analog signal from at least two of a first analog input signal, a second analog input signal, and a third analog input signal, the method comprising:

- Pseudo-randomly generating an encryption value (fig. 2, ref. num a, b, and c);
- Multiplying a first one of said first, second, and third analog input signals with said encryption value to produce a multiplied signal (fig. 2, ref. num 501, 502, or 503); and

of at least one of the pseudo-random output values, the modified first, second and third signals being encrypted analog signals so as to define first, second and third encrypted analog signals (fig. 1, ref. num 50).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine matrix multiplication for encryption of the three analog signals, as taught by Maeshima et al., to the communication method of Kohn et al. It would have been obvious to combine matrix multiplication for encryption of the three analog signals, as taught by Maeshima et al., to the communication method of Kohn et al. because the matrix multiplication allows a way to modify the red, green, and blue signals in order to encrypt the video signals (see col. 3, lines 21-23 of Maeshima et al.).

The combination of Kohn et al. as modified by Maeshima et al. still does not teach wherein said matrix multiplication involves summing an integer multiple of two of the first, second and third signals and subtracting an integer multiple of another one of said first second and third signals to produce the first encrypted analog signal.

Graf et al. teaches wherein said matrix multiplication involves summing an integer multiple of two of the first, second and third signals and subtracting an integer multiple of another one of said first second and third signals to produce the first encrypted analog signal (page 4, Sine-Wave Scrambling through end of page 6).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine summing an integer multiple of two of the signals and subtracting an integer multiple of another signal to produce the first encrypted analog signal, as taught by Graf et al., to the communication method of Kohn et al. as modified by Maeshima et al. It would have been obvious to combine summing an integer multiple of two of the signals and subtracting an integer multiple of another signal to produce the first encrypted analog signal, as taught by Graf et al., to the communication method of Kohn et al. as modified by Maeshima et al. because the summing and subtracting of signals confuses the sync separator causing them to function improperly, thus giving a scrambled video signal.

Claim 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graf et al. (Video Scrambling and Descrambling, 1998, Chapter 1) in view of Kohn et al. (USPN '990).

Regarding claims 41-43, Graf et al. teaches a method of decrypting encrypted analog signals including the steps of generating a first/second/third decrypted analog signal from a first/second/third pair of encrypted analog signals by: summing the two encrypted analog signals in the first/second/third pair of analog signals to produce a first/second/third sum; and dividing the first/second/third sum by a first/second/third value to produce a first/second/third encrypted analog signal (page 4, Sine-Wave Scrambling through the end of page 6).

Graf et al. does not teach performing the steps for three different decrypted analog signals.

Kohn et al. teaches performing the steps for three different decrypted analog signals (fig. 3).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine performing the steps for three different decrypted analog signals, as taught by Kohn et al., with the method of Graf et al. It would have been obvious to combine performing the steps for three different encrypted analog signals, as taught by Kohn et al., with the method of Graf et al. because three different decrypted signals provides a user the ability to encrypt three different signals, namely red, green, and blue.

Regarding claim 44, the combination of Graf et al. in view of Kohn et al. teaches wherein the first, second and third values are the same (see page 4, Sine-Wave Scrambling, the same sine value should be used of Graf et al.).

Regarding claim 45, the Examiner takes Official Notice that wherein the first, second and third values are integer multiples of 2 is an obvious choice for numbers that are to be used for dividing a signal.

It would have been obvious for the first, second, and third values to be integer multiples of 2 because the values are used for dividing the summed signals. By using integer multiples of 2, division is simply accomplished by phase shifting to the right one place.

Regarding claim 46, the combination of Graf et al. in view of Kohn et al. teaches periodically changing the value used for the first, second and third values as a function of the output of a pseudo random number generator (see fig. 2, ref. num 200 of Kohn et al.).

Claim 47-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graf et al. (Video Scrambling and Descrambling, 1998, Chapter 1) in view of Kohn et al. (USPN '990), and further in view of Maeshima et al. (USPN '923).

Regarding claims 47, 48, and 50, the combination of Graf et al. in view of Kohn et al. teaches all the limitations of claims 41-46 above. However, the combination of Graf et al. as modified by Kohn et al. does not teach comparing values between the first and second rows, the second and third rows, and the third and first rows to identify a first, second, and third column, respectively, in which the values include the same value; and controlling which one of a plurality of output lines the first/second/third decrypted analog signal is transmitted on as a function of the identified first/second/third column, the first, second, and third decrypted analog signals being transmitted on different output lines.

Maeshima et al. teaches comparing values between the first and second rows, the second and third rows, and the third and first rows to identify a first, second, and third column, respectively, in which the values include the same value (col. 4, lines 7-23); and controlling which one of a plurality of output lines the first/second/third decrypted analog signal is transmitted on as a function of the identified first/second/third column, the first, second, and third decrypted analog signals being transmitted on different output lines (col. 4, lines 33-53).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine comparing values between the first and second rows, the second and third rows, and the third and first rows to identify a first, second, and third column, respectively, in which the values include the same value and controlling which one of a plurality of output lines the first/second/third decrypted analog signal is transmitted on as a function of the identified first/second/third column, the first, second, and third decrypted analog signals being transmitted on different output lines, as taught by Maeshima et al., with the method of Graf et al./Kohn et al. It would have been obvious to combine comparing values between the first and second rows, the second and third rows, and the third and first rows to identify a first, second, and third column, respectively, in which the values include the same value and controlling which one of a plurality of output lines the first/second/third decrypted analog signal is transmitted on as a function of the identified first/second/third column, the first, second, and third decrypted analog signals being transmitted on different output lines, as taught by

Maeshima et al., with the method of Graf et al./Kohn et al. because comparing values between rows to identify a column in which the values include the same value correctly matches the encrypted values, which were transmitted on improper signal lines, the their corresponding decrypted values. Controlling which output line to output the signals on for a decryption algorithm restores the color signals to their proper output line. As is well known in the art, changing the lines to transmit the color signal would effectively render the picture unintelligible. To properly see the picture as an original signal would require supplying the color signals on their proper signal lines.

Regarding claims 49 and 51, the combination of Graf et al. as modified by Kohn et al. and Maeshima et al. teaches:

- Wherein the first and second rows of values are first and second rows of values included in a permutation matrix used to encrypt the analog signals included in the first pair of signals (see col. 4, abc and def of Maeshima et al.);
- Wherein the second and third rows of values are second and third rows of values included in said permutation matrix (see col. 4, def and ghi of Maeshima et al.); and
- Wherein the third and first rows of values are third and first rows of values included in said permutation matrix (see col. 4, ghi and abc of Maeshima et al.).

Regarding claim 52, the combination of Graf et al. as modified by Kohn et al. and Maeshima et al. teaches:

- o Wherein the first, second and third decrypted analog signals are red, green and blue analog video signals (see fig. 3, R, G, and B of Kohn et al.); and
- o Wherein the plurality of output lines include red, green and blue output lines which are coupled to a display device (see fig. 1, ref. num 160 of Kohn et al.).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon Hoffman whose telephone number is 703-305-4662. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on 703-305-9648. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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